



US 20190270431A1

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2019/0270431 A1**
(43) **Pub. Date:** **Sep. 5, 2019**
Clift et al.(54) **ELECTROMAGNETIC WINDSHIELD WIPER SYSTEM**(71) Applicant: **Tesla, Inc.**, Palo Alto, CA (US)(72) Inventors: **Nicolas Clift**, Boulder Creek, CA (US);
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(60) Provisional application No. 62/638,516, filed on Mar. 5, 2018.

Publication Classification(51) **Int. Cl.**
B60S 1/08 (2006.01)
B60S 1/16 (2006.01)
H02K 11/33 (2006.01)(52) **U.S. Cl.**CPC **B60S 1/0807** (2013.01); **B60S 1/16**
(2013.01); **B60R 16/0231** (2013.01); **B60S**
1/0818 (2013.01); **H02K 11/33** (2016.01)(57) **ABSTRACT**

An electromagnetic wiper system for a windshield of a vehicle includes a linear actuator, a wiper-arrangement, and control circuitry. The linear actuator includes at least one guide rail having permanent magnets and an electromagnetic moving block. The electromagnetic moving block includes at least one perforation that surrounds the at least one guide rail and at least one electromagnetic coil that surrounds the at least one perforation. The wiper-arrangement includes a wiper arm and a wiper blade, wherein at least the wiper arm is coupled to the electromagnetic moving block. The control circuitry controls a linear motion of the electromagnetic moving block along the at least one guide rail to steer the wiper arm that is coupled to the electromagnetic moving block back and forth across a length of the windshield to the windshield, wherein the electromagnetic moving block induces minimal friction during the linear motion.

